

REMARKS

Applicants' undersigned counsel thanks Examiner Rossi for her careful and thorough examination of the present application.

Applicants affirm the election of claims 1-9 and 18, Group I as identified by the Examiner, for prosecution on the merits.

The specification has been amended to remove references to specific claims.

Claim 1 has been amended in response to certain rejections as explained below, and also to specify the substrates are positioned in the vacuum chamber subsequent to having adhesive applied to one or both of them. Basis for this limitation is found in the specification as-filed. All the claims have been amended to remove reference numerals. Claims 10-17 have been canceled without prejudice as being drawn to a non-elected invention. New claim 19 has been added, basis for which can be found, e.g., in claim 2 as-filed. No new matter has been entered.

Claim 1 stands rejected under 35 USC § 112, second paragraph, on the grounds that the phrases "small area of contact" and "unstressed essentially plane configuration" are unclear or lack antecedent basis. Claim 1 has been amended to overcome the rejections.

Claim 2 stands rejected under 35 USC § 112, second paragraph, because the Examiner states it is unclear how the first substrate can be deformed to assume a concave or convex configuration, arguing that "one reading the present specification would clearly understand that the first substrate is only deformed to assume a concave configuration." Respectfully, the Examiner is referred to page 12, lines 3-9 of the specification, wherein it is described that the first substrate can be deformed to assume a convex configuration. Accordingly, claim 2 is submitted to be unambiguous, in that the deformation referred-to therein can be either convex or concave, as supported in the specification.

Claim 1 has been rejected under 35 USC § 102(b) as being anticipated by Perego. This rejection is respectfully traversed. The Examiner has taken the position that Perego discloses positioning the first and second substrates in a vacuum chamber, citing "lower vacuum chamber 8 and upper vacuum chamber 19." Office action, page 5. However, referring to the figures in Perego, it is clear that these spaces, though they may be evacuated during operation, are isolated from one another, are not in fluid communication, and certainly do not enclose the first and

second substrates such that they are positioned “in a vacuum chamber” as recited in the claim. Conversely, it is understood from Perego that evacuation of the spaces 8 and 19, respectively, is what hold the substrates 3 and 14 in place. This would be ineffective if the substrates were “in a vacuum chamber,” because then the pressure would be the same on both sides of the substrate (i.e. vacuum), and the substrates would therefore not be retained in place based on the associated pressure difference (which would be zero). Accordingly, for at least the foregoing reasons, the Section 102(b) rejection based on Perego is believed to be overcome.

Claim 1 has been further rejected under 35 USC § 103(a) as being obvious over Perego in further view of Kano, Russell and/or Miwa. Recognizing that Perego may be deficient to teach positioning the substrates in a vacuum chamber, the Examiner has argued the three secondary references teach doing so in order to prevent the formation of air bubbles in the adhesive. However, applicants submit that it would not have been obvious to modify Perego’s device to implement a vacuum chamber in order to arrive at present claim 1.

In the method of claim 1, adhesive is applied to at least one of the bonding surfaces (e.g. via conventional methods such as spin-coating), and then afterwards they are positioned in a vacuum chamber for the bonding step. Claim 1 has now been amended to clarify this point, i.e. that the adhesive is applied and then subsequently the substrates are positioned in the vacuum chamber. This has the advantage that the apparatus for carrying out the method need not be overburdened with features like adhesive dispensing means and rotatable supports. Also, the steps of applying adhesive and bonding are independent and can both be carried out in parallel according to their respective time requirements.

Conversely, in Perego the application of adhesive and bonding steps are carried out in the same apparatus with the substrates being held in supports 2 and 11, respectively, during both steps. Consequently, Perego’s apparatus is quite complex and it would be very difficult, and not at all obvious to enclose this entire apparatus within a separate vacuum chamber. As noted above, in fact, Perego suggests quite the opposite because to do so would negate the preferred mechanism for holding Perego’s substrates in place via vacuum suction.

Furthermore, considering that in claim 1 the adhesive is applied to the substrates *and then* they are positioned within the vacuum chamber to be bonded together, to maintain the rejection it must be shown to be obvious to separate the adhesive-application and bonding operations in Perego into two separate devices. However, once these two operations are separated, the entire

reason to deform the substrates 2 and 11 in Perego's bonding apparatus is removed. That is, in Perego it is the application of the adhesive that necessitates the deformation of the substrates. The reason for such deformation in Perego is so that the adhesive can be distributed over the substrate surface due to the force of gravity. See Perego, col. 3 lines 20-24 and col. 8 lines 17-21. However, if the adhesive is now to be applied outside of the bonding apparatus in Perego, as would be required to meet the limitations of claim 1, there would be no reason to provide the deformed substrate conformations in Perego. Accordingly, the reason to employ the only non-trivial feature that Perego has in common with claim 1, deformation of the substrates, would entirely disappear from the bonding apparatus.

In summary, claim 1 is not made obvious over Perego simply by realizing that applying a vacuum during the substrate bonding step (which is all that the secondary references are relied on to show) might be advantageous. Instead, to meet the limitations of claim 1, Perego's process would have to be disassembled into a sequence of steps that are performed in different apparatus, and the most significant of them (deforming the substrates) no longer would be performed in conjunction with bonding the substrates. This is because the only reason to deform the substrates in Perego is to ensure uniform adhesive coverage, which now would be done elsewhere, prior to inserting the substrates into the bonding apparatus. Therefore, even if one were to enclose the bonding apparatus in a vacuum chamber, the resulting method still would lack the step of deforming the substrates as part of the bonding step under vacuum.


The combination of these latter features is not made obvious over Perego for the reasons set forth above. In view of the foregoing, it is respectfully submitted that the rejections of claim 1 have now been overcome.

All remaining claims are dependent claims, and accordingly are believed to be allowable by virtue of their dependence on an allowable base claim. Should the Examiner have any questions or concerns with respect to the instant submission, she is invited and requested to please contact the undersigned attorney at the phone number provided below.

If there are any additional fees required by this communication, please charge any such fees to our Deposit Account 16-0820, Order No. 36076US1.

Respectfully submitted,

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Date: January 29, 2007